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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/816,643	04/02/2004	Kenichi Makino	7217/71979	1068

530 7590 12/02/2008

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EXAMINER	
GODBOLD, DOUGLAS	
ART UNIT	PAPER NUMBER
2626	

MAIL DATE	DELIVERY MODE
12/02/2008	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/816,643	MAKINO, KENICHI	
	Examiner	Art Unit	
	DOUGLAS C. GODBOLD	2626	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *19 September 2008*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-3,5-11 and 13-17* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-3,5-11 and 13-17* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

1. This Office Action is in response to correspondence filed 19 September 2008 in reference to application 10/816,643. Claims 1-3, 5-11, and 13-17 are pending and have been examined.

Continued Examination Under 37 CFR 1.114

2. A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on August 14, 2008 has been entered.

Response to Amendment

3. The amendment filed August 14, 2008 has been accepted and considered in this office action. Claims 1, 9, and 17 have been amended. The amendment of claim 17 has overcome its rejection under 35 USC 101.

Response to Arguments

4. Applicant's arguments with respect to claims 1-17 have been considered but are moot in view of the new ground(s) of rejection.

Claim Rejections - 35 USC § 103

5. The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

6. **Claims 1-3, 5-11, and 13-17** are rejected under 35 U S.C. 103(a) as being unpatentable over Tahara, Patent No: US 5,963,256 ("TAHARA"), in view of Johnston, Patent No: US 5,285,498 ("JOHNSTON"), and further in view of Ishino, Patent No: US 5,555,273 ("ISHINO").

7. Regarding **claim 1**, TAHARA teaches an encoding apparatus that encodes for compression a multi-channel signal including digital signals from a plurality of channels (see FIG. 6) by framing the multi-channel signal ("audio frame comprises a set of samples of about, for example, 20 to 30 msecs", TAHARA, column 7, lines 13-14), and determining a number of steps of quantizing data in the frame ("the coder 606 quantizes the inputted audio data 200-1b in prescribed quantization steps", TAHARA, column 7, lines 14-16), the apparatus comprising:

provisional-number-of-in-use-bits calculating means for calculating a sum of code length in a current frame as a provisional number of in-use bits for each channel ("the coding amount calculator 607 adds up the coding amount for the coded data outputted from the coder 606 in audio frame units and outputs this as the degree of difficulty of coding", TAHARA, column 7, lines 17-20) based on a provisional number of quantizing steps provisionally determined for quantizing the digital signals ("the coder 606

quantizes the inputted audio data 200-1b in prescribed quantization steps", TAHARA, column 7, lines 14-16);

inter-channel bit allocation means ("coding rate allocator 506", TAHARA, column 7, line 45) for allocating a number of bits usable for each channel based on a ratio of the provisional number of in-use bits for each channel with a total, provisional number of in-use bits, which is a sum of the provisional numbers of the in-use bits for all the plurality of channels (see TAHARA, column 7, equation [1], and TAHARA, column 8, lines 1-8); and

number-of-bits adjusting means for adjusting the number of in-use bits based on the number of usable bits allocated to each channel ("audio coders 306A-1 to 306A-n code data ... based on coding rate information supplied by the coding rate allocator 506", TAHARA, column 8, lines 18-22),

in which the provisional-number-of-in-use-bits calculating means includes means for determining the provisional number of quantizing steps, means for quantizing data obtained from the means for normalizing on the basis of the provisional number of quantizing steps obtained from the means for determining the provisional number of quantizing steps,

However TAHARA does not specifically disclose that entropy coding is performed on the digital signals,

means for dividing data in the current frame into units of coding,

means for normalizing data included in the units of coding using a number of scale factors

means for determining the provisional number of quantizing steps based on the number of scale factors

and means for entropy coding quantized normalized data obtained from the means for quantizing normalized data and for obtaining the provisional number of in-use bits.

In the same field of digital signal coding, JOHNSTON teaches that entropy coding is performed on the digital signals (see JOHNSTON, FIG. 7, Huffman coding is performed on quantized data).

means for dividing data in the current frame into units of coding (see JOHNSTON, FIG. 7, the data is transformed into coefficients and scale factors),

means for normalizing data included in the units of coding using a number of scale factors (column 18 line 1, MCDT normalization is used)

means for determining the provisional number of quantizing steps based on the number of scale factors ("quantization process affects both spectral coefficients and scale factors", JOHNSTON, column 21, lines 67-68)

and means for entropy coding quantized normalized data obtained from the means for quantizing normalized data and for obtaining the provisional number of in-use bits (see JOHNSTON, FIG. 7, Huffman coding is performed on quantized data. Fig 7. also shows bit requirements feeding back out of Huffman coding unit).

Therefore, it would have been obvious to a person of ordinary skill in the art at the time the invention was made to perform the coding method of JOHNSTON on the multiple channels of TAHARA in order to reduce the channel bit rate requirements and

encode with less noise (see JOHNSTON, column 3, lines 52-54 and 65-67.).

TAHARA and JOHNSTON do not specifically teach:

wherein the number-of-bits adjusting means includes means for calculating a re-calculated number of quantizing steps based on a comparison of the number of in-use bits with the number of usable bits, wherein, if the number of in-use bits is less than the number of usable bits, the re-calculated number of quantizing steps is greater than the provisional number of quantizing steps, and wherein, if the number of in-use bits is greater than the number of usable bits, the re-calculated number of quantizing steps is less than the provisional number of quantizing steps, and

wherein the means for quantizing is for quantizing the normalized data obtained from the means for normalizing data on the basis of the re-calculated number of quantizing steps obtained from the means for re-calculating, and wherein the means for entropy coding is for entropy encoding the re\- calculated quantized normalized data and for obtaining the adjusted number of in-use bits.

In the same field of coding, ISHINO teaches:

wherein the number-of-bits adjusting means includes means for calculating a re-calculated number of quantizing steps based on a comparison of the number of in-use bits with the number of usable bits, wherein, if the number of in-use bits is less than the number of usable bits, the re-calculated number of quantizing steps is greater than the provisional number of quantizing steps, and wherein, if the number of in-use bits is greater than the number of usable bits, the re-calculated number of quantizing steps is less than the provisional number of quantizing steps (Figure 1, described column 2 line

43 – column 3 line 18. Bitrate output is compared to available bits, and quantization step size is readjusted accordingly), and

wherein the means for quantizing is for quantizing the normalized data obtained from the means for normalizing data on the basis of the re-calculated number of quantizing steps obtained from the means for re-calculating, and wherein the means for entropy coding is for entropy encoding the re-calculated quantized normalized data and for obtaining the adjusted number of in-use bits (figure 1, quantizer step size information is fed back into quantizer, and into Huffman coding.).

Therefore it would have been obvious to one of ordinary skill to use the quantization step size adjustment as taught by ISHINO with the combination of TAHARA and JOHNSTON in order to allow for an efficient way of regulating the bitrate in a given channel.

8. Regarding **claim 2**, TAHARA further teaches:

the plurality of channels includes a plurality of group channels each including two or more channels (see TAHARA, FIG. 6, video data 200-1a and audio data 200-1b are grouped into program data 200-1);

the provisional-number-of-in-use-bits calculating means calculates the provisional number of in-use bits in each group channel ("coded volume calculator 602 adds up the coded amounts of data outputted from the coder 601 and outputs this as the degree of difficulty of coding", TAHARA, column 6, lines 42-44, see also TAHARA, column 7, lines 17-20); and

the inter-channel bit allocation means ("coding rate allocator 506", TAHARA, column 7, line 45) allocates the number of bits usable for each group channel based on a ratio of the provisional number of in-use bits for each group channel with the total provisional number of in-use bits, which is a sum of the provisional numbers of in-use bits for each group channel (see TAHARA, column 7, equation [1], and TAHARA, column 8, lines 1-8).

9. Regarding **claim 3**, JOHNSTON further teaches that means for dividing data transforms a time-axis signal into a frequency-axis signal (see JOHNSTON, FIG. 7, MDCT is performed on the input signal), and divides the frequency axis signal into units of coding (see JOHNSTON, FIG. 7, the data is transformed into coefficients and scale factors).

10. Regarding **claim 5**, TAHARA further teaches that the inter-channel bit allocation means allocates a part of a total number of allocable bits as the number of usable bits corresponding to the ratio of the provisional number of in-use bits for each channel with the total provisional number of in-use bits for all the channels (see TAHARA, column 7, equation [1], and TAHARA, column 8, lines 1-8).

11. Regarding **claim 6**, TAHARA further teaches that the inter-channel bit allocation means allocates other than the part of the total number of allocable bits evenly for each channel (see TAHARA, column 7, equation [1], and TAHARA, column 8, lines 1-8).

12. Regarding **claim 7**, TAHARA further teaches that the inter-channel bit allocation means makes a proportional allocation of other than the part of the total number of allocable bits for each channel correspondingly to a code length in which each digital signal is encoded without being compressed (see TAHARA, column 7, equation [1], and TAHARA, column 8, lines 1-8).

13. Regarding **claim 8**, TAHARA further teaches that the digital signals are digital audio signals ("audio data 200-1b to 200-nb", TAHARA, column 6, lines 47-48).

14. Regarding **claim 9**, the rejection is based on the same reason described for claim 1, because the claim recites the same or similar limitation(s) as claim 1.

15. Regarding **claim 10**, the rejection is based on the same reason described for claim 2, because the claim recites the same or similar limitation(s) as claim 2.

16. Regarding **claim 11**, the rejection is based on the same reason described for claim 3, because the claim recites the same or similar limitation(s) as claim 3.

17. Regarding **claim 13**, the rejection is based on the same reason described for claim 5, because the claim recites the same or similar limitation(s) as claim 5.

18. Regarding **claim 14**, the rejection is based on the same reason described for claim 6, because the claim recites the same or similar limitation(s) as claim 6.

19. Regarding **claim 15**, the rejection is based on the same reason described for claim 7, because the claim recites the same or similar limitation(s) as claim 7.

20. Regarding **claim 16**, the rejection is based on the same reason described for claim 8, because the claim recites the same or similar limitation(s) as claim 8.

21. Regarding **claim 17**, the rejection is based on the same reason described for claim 1, because the claim recites the same or similar limitation(s) as claim 1.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to DOUGLAS C. GODBOLD whose telephone number is (571)270-1451. The examiner can normally be reached on Monday-Thursday 7:00am-4:30pm Friday 7:00am-3:30pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Patrick Edouard can be reached on (571) 272-7603. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the

Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

11/25/2008

/Talivaldis Ivars Smits/
Primary Examiner, Art Unit 2626

DCG